Remarks

In view of the above amendments and the following remarks, reconsideration of the outstanding office action is respectfully requested.

By the above amendments, applicant has canceled the previously withdrawn, non-elected subject matter. In addition, applicant has introduced new claim 10, which recites the step of "identifying the hypersensitive response elicitor protein or polypeptide that can impart drought stress tolerance to a plant." Applicant submits that descriptive support for the identification of a hypersensitive response elicitor protein or polypeptide that can impart drought tolerance to a plant is provided in Example 12, which indicates that HrpN of *Erwinia amylovora* did, in fact, impart drought stress tolerance to cucumber plants treated therewith. Thus, no new matter has been entered.

The rejection of claims 1-5 and 7-9 under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 5,776,889 to Wei et al. ("Wei I"), in view of Mullet et al., "Plant Cellular Responses to Water Defecit," *Plant Growth Regulation* 20:119-124 (1996)("Mullet"), Chaves et al., "How Plants Cope with Water Stress in the Field, Photosynthesis and Growth," *Annals of Botany* 89:907-916 (2002)("Chaves"), and Bruce et al., "Molecular and Physiological Approaches to Maize Improvement for Drought Tolerance," *J. Exp. Botany* 53(366):13-25 (2002)("Bruce"), is respectfully traversed.

Wei I teaches the application of a hypersensitive response elicitor protein or polypeptide to plants whereby the treated plant is rendered disease resistant (i.e., resistant to pathogens). Wei I provides a number of examples for the treatment of different plants with HrpN of *Erwinia amylovora*. In each of the examples, however, the treated plants were grown under greenhouse conditions. As acknowledged by the U.S. Patent and Trademark Office ("PTO"), Wei I is silent with regard to growing the treated plants under drought conditions.

Mullet indicates that water availability and drought limit crop yields worldwide and suggests that plants exhibiting traits for drought tolerance (i.e., improved yield in drought environments) should be planted in drought-susceptible regions. Mullet further identifies the effects of drought on plants, which include, *inter alia*, growth inhibition, osmotic adjustment and solute accumulation, expression or activation of water channels, and changes in carbon and nitrogen metabolism.

Chaves indicates that plants are often subjected to periods of soil and atmospheric water deficit during their life cycle and reviews how different plants have adapted mechanisms to avoid or tolerate drought conditions. These include, *inter alia*, different capacities for water absorption and alterations in carbon and nitrogen metabolism.

Bruce reviews various methods used by plant breeders for development of high yield and enhanced drought tolerance of commercial maize lines.

The PTO has taken the position that the invention of claim 1 is inherently taught by Wei I even though the treated plants described by Wei I never experienced drought stress. Instead, the PTO relies on Mullet, Chaves, and Bruce as evidence that certain plant types are commonly grown under drought conditions. The PTO therefore concludes at page 3 of the outstanding office action that "some of the plants of Wei [i.e., Wei I],to which hypersensitive response elicitors have been topically applied, would necessarily be grown in drought stress conditions at least at some point in the plant's life cycle, and the method of imparting pathogen resistance taught by Wei et al [i.e., Wei I] is inherently one of imparting drought resistance."

Applicant respectfully disagrees for several reasons, identified below.

Firstly, to establish that a reference inherently anticipates a claim, it must be demonstrated that the reference *necessarily* functions in accordance with the limitations of a claim. *See In re Cruciferous Sprout Litigation v. Sunrise Farms*, 301 F.3d 1343, 1349 (Fed. Cir. 2002). The PTO has cited to Mullet, Chaves, and Bruce as evidence that certain plants could be grown under drought conditions; however, there is no evidence that they were in fact exposed to drought. Other plants (e.g., rice) are frequently grown under non-drought conditions. Many commercial plants can be grown under hydroponic conditions (*see* Executive Summary: "Hydroponics as an Agricultural Production System," Hassall & Associates Pty Ltd., RIRDC Publication No. 01/141 (2001) (copy attached as Exhibit 1) ("RIRDC Publication")). Collectively, Mullet, Chaves, Bruce, and the RIRDC Publication indicate that plants can be grown under a variety of conditions, possibly drought conditions and possible not. That plants treated in accordance with Wei I may occasionally be exposed to drought conditions is immaterial, because occasional results are not inherent. *See Mehle/Biophile Internat'l Corp. v. Selvac Acquisitions Corp.*, 192 F.3d 1362, 1365, 52 USPQ2d 1303, 1306 (Fed. Cir. 1999). Because Wei I fails to identify the conditions under which plants can be grown and it is known that plants can be grown under a variety of conditions, only one of which is drought, the PTO has failed to demonstrate that Wei I

necessarily teaches that the treated disease resistant plants are grown under drought conditions.

Secondly, it is a well established basis of patent law that new uses of known processes are patentable. *See* 35 U.S.C. § 101 (2004) ("Whoever invents or discovers any new and useful process ... may obtain a patent therefore...."); 35 U.S.C. § 100(b) (2004) ("The term 'process' means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material."). Whether or not a new use of a known process is patentable depends on whether or not the known process is "directed *to the same purpose*" as previously known processes. *See Bristol-Myers Squibb Co. v. Ben Venue Labs, Inc.*, 246 F.3d 1368, 1376, 58 USPQ2d 1508, 1514 (Fed. Cir. 2001) (emphasis added). In *Bristol-Myers*, the Federal Circuit held that claims directed to methods of treating patients for taxol-sensitive tumors by administering a certain dosage of taxol to a patient over about three hours, either with or without pretreatment of the patient for reduction of hypersensitivity to taxol, were inherently taught by a reference that reported phase I testing of taxol, using dosages and time constraints as claimed, and suggested pretreatment of patients to reduce their hypersensitivity. Importantly, the court noted that the claimed methods were *for the same purpose* as the known process described in the prior art (*id.*), and the claimed methods did not require a particular result of the recited steps (246 F.3d at 1372-73, 1378; 58 USPQ2d at 1514, 1515).

Unlike the relationship between the claimed methods and the prior art in *Bristol-Myers*, the presently claimed methods are directed to a *different purpose* as compared to the purpose reported in Wei I. Specifically, the presently claimed methods are directed to methods of imparting drought stress tolerance to a plant whereas Wei I teaches a method of imparting disease resistance to a plant. Moreover, the process steps are *different*. Wei I, for the reasons noted above, fails to teach or suggest "growing the plant under drought conditions" as recited in claim 1. Finally, the presently claimed method of use (i.e., of claim 1) requires a particular result, specifically that the applying of the hypersensitive response elicitor protein or polypeptide "imparts to the plant drought stress tolerance." Thus, the presently claimed method of imparting drought stress tolerance satisfies all of the requirements identified by the Federal Circuit in *Bristol-Myers* for purposes of obtaining patent protection for a new use of a known product or process (i.e., applying a hypersensitive response elicitor protein or polypeptide to plants).

Finally, with respect to newly introduced claim 10, applicants submit that this dependent claim recites a limitation that is neither taught nor suggested by Wei I. In

particular, new claim 10 requires "identifying the hypersensitive response elicitor protein or polypeptide that can impart drought stress tolerance to a plant" prior to the steps of applying and growing. Because Wei I fails to teach or suggest some basis for identifying (i.e., screening) hypersensitive response elicitor proteins or polypeptides for use in imparting drought resistance, Wei I cannot be said to teach or suggest the identification of such elicitors.

For all these reasons, applicant submits that the rejection of claims 1-5 and 7-9 as anticipated by Wei I is improper and new claim 10 is separately patentable over Wei I. The rejection over Wei I should be withdrawn.

The rejection of claims 1-5 and 7-9 under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 5,859,324 to Wei et al. ("Wei II") is respectfully traversed.

Wei II is substantially identical in disclosure to Wei I, the teachings of which are set forth above. For substantially the same reasons why Wei I fails to inherently anticipate the presently claimed invention, Wei II likewise fails to inherently anticipate the presently claimed invention. Therefore, the rejection of claims 1-5 and 7-9 as anticipated by Wei II is improper and should be withdrawn. Moreover, for reasons noted above, applicant submits that

The rejection of claims 1-3 and 7-9 under the judicially-created doctrine of obviousness-type double patenting over claims 1-3, 5, 9-20, 28-29, 33, and 35 of U.S. Patent No. 6,277,814 to Qiu et al. ("Qiu") in view of Mullet, Chaves, and Bruce is respectfully traversed.

The analysis of an obviousness-type double patenting rejection parallels the analysis of an obviousness determination under 35 U.S.C. § 103 (*In re Braat*, 937 F.2d 589, 592-593; 19 USPQ2d 1289, 1292 (Fed. Cir. 1991)), however the analysis is limited to comparing the scope of the claims between the application and the cited patent (see *Manual of Patent Examining Procedure* § 804 (2001)).

Claim 1 of Qiu recites a method of enhancing the growth of plants that includes the step of "applying a hypersensitive response elicitor polypeptide or protein in noninfectious form to a plant or plant seed under conditions effective to enhance growth of the plant or plants grown from the plant seed, compared to an untreated plant or plants seed, wherein the hypersensitive response elicitor protein or polypeptide is heat stable, glycine rich, and contains no cysteine." None of claims 2, 3, 5, 9-20, 28-29, 33, or 35 specify that the plant or plant grown from the plant seed are actually grown under drought stress conditions.

The PTO has taken the position that the presently claimed invention is not patentably distinct over the above-listed claims of Qiu because those claims inherently teach the presently claimed invention, as evidence by Mullet, Chaves, and Bruce.

Applicant respectfully disagrees for substantially the same reasons noted above with respect to Wei I. In particular, the evidence cited by the PTO (i.e., in the form of Mullet, Chaves, and Bruce) and the evidence cited by applicants (i.e., the RIRDC Publication) demonstrate that plants can be grown under a variety of conditions, possibly drought conditions and possible not. That plants treated as claimed in Qiu may occasionally be exposed to drought conditions is immaterial, because occasional results are not inherent. *See Mehle/Biophile Internat'l Corp.*, 192 F.3d at 1365, 52 USPQ2d at 1306. Because the claims of Qiu, like Wei I, fail to specify the conditions under which plants can be grown and it is known that plants can be grown under a variety of conditions, only one of which is drought, the PTO has failed to demonstrate that the claims of Qiu for growth enhancement of plants *necessarily* require growth under drought conditions.

Furthermore, the PTO's position, as asserted, is one of obviousness of the presently claimed method of imparting drought stress tolerance to a plant over the previously claimed method of imparting growth enhancement to plants. The PTO's position is essentially that one of ordinary skill in the art, when practicing the invention claimed in Qiu under drought conditions, would have necessarily (but unwittingly) practiced the claimed invention. However, it is well established law that whether a feature is inherent in a prior art reference is *irrelevant* to the question of obviousness. It has been repeatedly stated by the Court of Claims and Patent Appeals, predecessor of the Federal Circuit, that a feature "which may be inherent is not necessarily known" and that "obviousness cannot be predicated on what is unknown." *In re Shetty*, 566 F.2d 81, 86, 195 USPQ 753, 757 (CCPA 1977) (quoting from *In re Spormann*, 363 F.2d 444, 448, 150 USPQ 449, 452 (CCPA 1966)).

One of ordinary skill in the art, when practicing the invention recited in Qiu, would not have known that the treated plants were rendered drought stress tolerant (i.e., absent comparing the plants treated with the hypersensitive response elicitor protein or polypeptide with untreated plants). After all, the claims of Qiu do not recite the making of any such comparison. Because the imparting of drought stress tolerance to the plants would have been unknown to one of ordinary skill in the art, it would not have been obvious to one of ordinary skill in the art that the plants exhibiting enhanced growth were likewise exhibiting drought stress tolerance, imparted by the application of the hypersensitive response elicitor

protein or polypeptide. For these reasons, the presently claimed invention would not have been obvious over the above-listed claims of Qiu.

Therefore, the rejection of claims 1-3 and 7-9 for obviousness-type double patenting over claims 1-3, 5, 9-20, 28-29, 33, and 35 of Qiu is improper and should be withdrawn.

The rejection of claims 1-5 and 7-9 under the judicially-created doctrine of obviousness-type double patenting over claims 1-24 of Wei I is respectfully traversed.

Claim 1 of Wei I recites a method of imparting pathogen resistance to plants that includes the step of "applying externally to a plant a hypersensitive response eliciting bacterium, which does not cause disease in that plant, or a hypersensitive response eliciting polypeptide or protein, wherein the hypersensitive response eliciting polypeptide or protein corresponds to that derived from a pathogen selected from the group consisting of *Erwinia amylovora, Erwinia chrysanthemi, Pseudomonas syringae, Pseudomonas solanacearum, Xanthomonas campestris,* and mixtures thereof." None of claims 2-24 specify that the recited plant (treated with the hypersensitive response eliciting bacterium or the hypersensitive response eliciting polypeptide or protein) is actually grown under drought stress conditions.

Applicant respectfully disagrees for substantially the same reasons noted above with respect to Wei I and Qiu. In particular, the evidence cited by the PTO (i.e., in the form of Mullet, Chaves, and Bruce) and the evidence cited by applicants (i.e., the RIRDC Publication) demonstrate that plants can be grown under a variety of conditions, possibly drought conditions and possible not. That plants treated as claimed in Wei I may occasionally be exposed to drought conditions is immaterial, because occasional results are not inherent. *See Mehle/Biophile Internat'l Corp.*, 192 F.3d at 1365, 52 USPQ2d at 1306. Because the claims of Wei I, like the claims of Qiu, fail to specify the conditions under which plants can be grown and it is known that plants can be grown under a variety of conditions, only one of which is drought, the PTO has failed to demonstrate that the claims of Wei I for imparting pathogen resistance to plants *necessarily require* growth of those plants under drought conditions.

Furthermore, as noted above with respect to Qiu, the asserted obviousness-type double patenting rejection cannot be predicated on that which is unknown. One of ordinary skill in the art, when practicing the invention recited in Wei I, would not have known that the treated plants were rendered drought stress tolerant (i.e., absent comparing the plants treated with the hypersensitive response elicitor protein or polypeptide with untreated

plants, both of which would have to have been grown under drought conditions). After all, the claims of Wei I do not recite the making of any such comparison. Because the imparting of drought stress tolerance to the plants would have been unknown to one of ordinary skill in the art, it would not have been obvious to one of ordinary skill in the art that the plants prepared in accordance with the claims of Wei I were likewise exhibiting drought stress tolerance imparted by the application of the hypersensitive response elicitor protein or polypeptide. For these reasons, the presently claimed invention would not have been obvious over the above-listed claims of Wei I.

Therefore, the rejection of claims 1-5 and 7-9 under the judicially-created doctrine of obviousness-type double patenting over claims 1-24 of Wei I is improper and should be withdrawn.

The rejection of claims 1-5 and 7-9 under the judicially-created doctrine of obviousness-type double patenting over claims 1-18 of Wei II is respectfully traversed.

Claim 1 of Wei II recites a "pathogen-resistant plant to which a hypersensitive response eliciting bacterium, which does not cause disease in that plant, or a hypersensitive response eliciting polypeptide or protein has been applied, wherein the hypersensitive response eliciting polypeptide or protein corresponds to that derived from a pathogen selected from the group consisting of *Erwinia amylovora, Erwinia chrysanthemi, Pseudomonas syringae, Pseudomonas solanacearum, Xanthomonas campestris,* and mixtures thereof." None of claims 2-18 specify that the claimed plant is actually grown under drought stress conditions.

The PTO has taken the position that the presently claimed invention is not patentably distinct over the above-listed claims of Wei II because those claims inherently teach the presently claimed invention, as evidence by Mullet, Chaves, and Bruce.

Applicant respectfully disagrees for substantially the same reasons noted above with respect to Wei I and Qiu. In particular, the evidence cited by the PTO (i.e., in the form of Mullet, Chaves, and Bruce) and the evidence cited by applicants (i.e., the RIRDC Publication) demonstrate that plants can be grown under a variety of conditions, possibly drought conditions and possible not. That plants treated as claimed in Wei II may occasionally be exposed to drought conditions is immaterial, because occasional results are not inherent. *See Mehle/Biophile Internat'l Corp.*, 192 F.3d at 1365, 52 USPQ2d at 1306. Because the claims of Wei II, like Wei I and the claims of Qiu, fail to specify the conditions under which plants can be grown and it is known that plants can be grown under a variety of

conditions, only one of which is drought, the PTO has failed to demonstrate that the claims of Wei II for pathogen-resistant plants *necessarily require* growth of those plants under drought conditions.

Furthermore, as noted above with respect to Qiu, the asserted obviousness-type double patenting rejection cannot be predicated on that which is unknown. One of ordinary skill in the art, when practicing the invention recited in Wei II, would not have known that the treated plants were rendered drought stress tolerant (i.e., absent comparing the plants treated with the hypersensitive response elicitor protein or polypeptide with untreated plants, both of which would have to have been grown under drought conditions). After all, the claims of Wei II do not recite the making of any such comparison. Because the imparting of drought stress tolerance to the plants would have been unknown to one of ordinary skill in the art, it would not have been obvious to one of ordinary skill in the art that the disease-resistant plants of Wei II were likewise exhibiting drought stress tolerance imparted by the application of the hypersensitive response elicitor protein or polypeptide. For these reasons, the presently claimed invention would not have been obvious over the above-listed claims of Wei II.

Therefore, the rejection of claims 1-5 and 7-9 under the judicially-created doctrine of obviousness-type double patenting over claims 1-18 of Wei II is improper and should be withdrawn.

In view of the all of the foregoing, applicants submit that this case is in condition for allowance and such allowance is earnestly solicited.

Respectfully submitted,

Date: February 17, 2004

Edwin V. Merkel
Registration No. 40,087

NIXON PEABODY LLP
Clinton Square, P.O. Box 31051
Rochester, New York 14603
Telephone: (585) 263-1128
Facsimile: (585) 263-1600

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Summary of full report

Hydroponics as an Agricultural Production System

By Hassall & Associates Pty Ltd

November 2001

RIRDC Publication No 01/141 RIRDC Project No HAS-9A

Executive Summary

The purpose of this study was to increase the understanding of hydroponics role as an alternative to conventional soil based agricultural production systems. Hydroponics is the production of crops in isolation from the soil, either with or without a medium, with their total water and nutrient requirements supplied by the system. Production takes place either in a greenhouse or outdoors and systems can recirculate or allow nutrients to 'run-to-waste'.

The Rural Industries Research and Development Corporation (RIRDC) funded the study under its Resilient Agricultural Systems Sub Program. The research addressed international and domestic industries, requirements for commercial production, the economics of commercial production and constraints to further expansion.

The key messages to emerge from the review of the global commercial hydroponics industry are:

• The commercial hydroponics industry has grown four to five fold in the last 10 years and is currently estimated at between 20,000 and 25,000 ha with a farm gate value of $US6 to $US8 billion;
• Production is focused in affluent countries with discerning consumers (The Netherlands, Spain, Canada, Japan, UK, USA, Italy, New Zealand and Australia) or countries which have access to these markets (Mexico and China);
• Worldwide, there are a limited number of crops grown hydroponically. Tomatoes, cucumbers, lettuce, capsicums and cut flowers are the most important. They are also the most important hydroponically produced crops in Australia;
• Hydroponics has embraced Integrated Pest Management and is moving away from 'run-towaste' systems with their potential for environmental problems;
• Industry success in the short to medium term will come from a market focus not a break through in hydroponics technology;
• The Dutch provide an efficient industry model for Australia to emulate. Features of the Dutch model are contrasted to the Australian industry in the report;
• The adverse reaction of German consumers to an 'unnatural' production system needs to be noted and addressed by the Australian industry;
• North American expansion is currently 'production push' and is set for an expanded period of low returns if a Dutch style market focus is not brought to their production;
• Competition on the domestic Australian market can be expected from New Zealand, and possibly Holland, in the short to medium term; and

• International integration of production and marketing will 'shut out' producers who are not sufficiently large-scale or part of a cluster arrangement. This is equally true for Australian and overseas growers.

Review of the Australian commercial hydroponic industry reveals that:

• The area of commercial hydroponic production increased from 150 ha in 1990 to 500 ha by 1996 and it is feasible that the area of production could be double this in 2001. There are between 1,000 and 2,000 domestic commercial hydroponic growers. Industry value is estimated by industry leaders at approximately $400 million gross at farm gate. If this is accurate, it is the equivalent to 20% of the value of total vegetable and cut flower production;
• Commercial production includes an array of techniques, and no one system is considered best. Rockwool and NFT are the backbones of the Australian industry and systems are moving towards recirculation. More than half of all Australian hydroponic production is grown outdoors reflecting the high proportion of lettuce grown. This is different to the worldwide scene where the majority of hydroponic crops are grown in greenhouses;
• Reluctance of growers and retailers to market product under a hydroponic label is one reason why the industry is perceived as being smaller than it actually is. Hydroponic produce is often marketed on qualities such as taste and freshness rather than method of production;
• Industry growth is being driven in part by new entrants and in part by conventional soil based growers converting to hydroponic production techniques. Industry growth, is expected to continue in this way over the next few years;
• Australia is ranked in the top 10 of world commercial hydroponic producers. This is not to say that that the industry is best practice in critical production and marketing issues. The industry is characterised by a large 'tail' of producers who are reluctant to invest and adopt innovation;
• Production takes place Australia wide but is concentrated in those states with larger population and therefore marketing bases, ie NSW, Queensland and Victoria;
• Australia has a large hydroponic lettuce industry, which dominates the market for 'fancy' lettuce. The industry is largest in NSW and has achieved export success;
• Cut flowers are grown in all the major hydroponic states, typically using techniques based around an inert 'potting mix' type medium. Popular commercial hydroponic flowers include roses, gerberas, carnations and lisianthus;
• There are a number of large hydroponic tomato growing and marketing clusters in Victoria which have achieved critical mass and supply the major supermarkets with premium product;
• Hydroponic cucumbers, especially the continental variety, hold a significant share of the total domestic market. Increasing Lebanese cucumber production in the Sydney Basin is also a significant contributor to the domestic market. Production has achieved appropriate commercial scale and a single Queensland grower has 5.7 ha of continental cucumbers under production;
• Industry strengths/opportunities include real comparative advantages and growth opportunities for the Australian industry, industry weaknesses/threats are not insurmountable; and
• The industry has an appropriate representative organisation but it is currently run by unpaid members of the industry and therefore suffers from a lack of continuity and does not have a professional image that would assist with leadership and planning. All three tiers of government have effectively supported the industry.

All things considered the industry has grown rapidly from a zero base over the last 25 years. False starts and setbacks associated with dubious means of promotion in the 1980s and early 1990s have been overcome and the industry is fast reaching critical mass.

Successful commercial production is undertaken by families producing for boutique markets, families as part of a larger growing and marketing cooperative and by corporates with investors who are not active in day-to-day management. The industry is capital intensive and capital costs are anywhere between $100 and $200 per square metre (m2), depending on the sophistication of the greenhouse being proposed and the level of equipment being included. Viable production units are a minimum of 1,500m2. Commercial success is linked to:

• Establishment of the venture in a realistic economic framework;
• Attention to market requirements before production commences;
• Realistic expectation of price, yield and labour requirements; and
• Experience in horticultural production prior to entry into hydroponics.

Hydroponics is not a magical production system, it requires more skill to manage than conventional soil based systems and generates more technical problems. It is vital to recognise that the same level of skill is required to grow crops hydroponically as for soil growing (Rick Donnan, pers. comm.).

Many newcomers have underestimated the horticultural skills required and their operations have consequently failed.

The results of the economic analysis show modest returns for entry-level investment. Results are consistent with agricultural production for a mature product, ie hydroponic products are mainstream and widely consumed, hydroponic produce does not attract the very high prices of a new or novel crop or product (although premiums are sometimes available). Returns are less than those achieved for highly speculative crops with limited or newly established markets. It needs to be remembered that the majority of commercial hydroponic growers are competing against conventional soil based producers with mainstream commodity style products (tomatoes, lettuce, cucumbers and so on).

Improved industry profit is linked to larger scale production, exploitation of niches and on-farm value adding.

The Australian industry is successful as a commercial producer, to build on that success, the following constraints will need to be addressed:

- Grower cooperation to ensure production volumes, adequate grading and market interest in industry output;
- A retreat from the amateurism that characterises a new or emerging industry, ie use of substandard equipment and a reluctance to invest/embrace a commercial scale of production;
- Promotion to shift public opinion away from an image of backyard marijuana production and a high chemical input or unnatural systems;

Information freely available to counter the dubious claims made by some industry promoters regarding industry yields and profits. This information together with industry promotion would assist to improve the industry's image with financial institutions;

- Attention to a constantly shifting and ever more sophisticated market, including one that is starting to demand the low chemical, sustainably produced product that is the industry's strength. Product branding may be one way of capturing this market;
- Industry education and training at a grass roots level of production is important. This might include education on climate control, crop environmental requirements and IPM programs within greenhouses;
- Industry data and standards including, potentially formal QA procedures or a suitable HACCP assessment; and
- Full time professional industry leadership to drive the industry from a strategic position, including formulation and resourcing of an industry strategic plan.

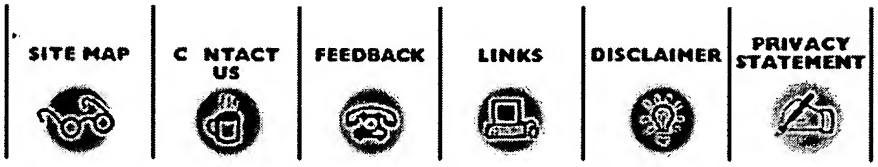
None of these industry constraints are intractable.

The study has shown that the commercial hydroponics industry is successful and rapidly expanding.

It dominates the production of a limited number of crops and is probably the fastest growing Australian horticultural sector. The industry is larger than might commonly be perceived and this is because a lot of product is marketed on quality (eg vine ripened) rather than method of production (hydroponically grown).

Not all crops are suitable for growing hydroponically and the technology is unlikely to displace soil production for bulk commodity items in the foreseeable future. The industry will continue to grow over the next three to five years, especially if identified opportunities are brought to fruition.

It is the recommendation of this study's authors that the industry convene through the Australian Hydroponic and Greenhouse Association (AHGA) and form a working group to examine options to fund the creation of a full time industry CEO's position. It would be the responsibility of the hydroponic industry's CEO to formulate an industry plan and in cooperation with the industry, to address both the industry constraints and opportunities identified by stakeholders and reported in this study.



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